OCCUPANT LOAD WORKSHEET

1	2	3	4	5	6	7	8	9
ROOM OR SPACE DESIGNATION	CLASSIFICATION OF Table 1003.2.2.2 OCCUPANCY OR USE	FLOOR AREA (square feet)	DENSITY SF/PERSON (specify if net or gross value)	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NUMBER	OCCUPANT LOAD BY COMBINATION	ROOM OR SPACE TOTAL	OCCUPANTS ACCOUNTED FOR IN OTHER SPACES

The total occupant load for this worksheet page (or story of the building) =_____ Occupants

The total occupant load for this building =_____ Occupants *(total of all worksheets/stories)*

Caution: Note that this form is not adequate for use of covered mall total occupant calculations.

WORKSHEET INSTRUCTIONS

Design occupant load as determined by IBC 1003.2.2 requirement shall be the **largest of the three methods** found in section 1003.2.2.1, 1003.2.2.2, and 1003.2.2.3 procedures. This Worksheet (partial shown below) can be used to show the requirement for each space.

The first five columns are used to show the IBC 1003.2.2.2 procedure, otherwise known as the Table 1003.2.2.2 or calculation method. The next column is used for actual numbers either by fixed seats or posting of capacity. The seventh column is for the procedure where occupants may be in more than one space, but each space may be separately or simultaneously occupied.

OCCUPANT LOAD WORKSHEET

Column omitted because of space

1	2	3	4	5	6	7	8
ROOM OR SPACE DESIGNATION	CLASSIFICATION OF Table 1003.2.2.2 OCCUPANCY OR USE	FLOOR AREA (square feet)	DENSITY SF/PERSON (specify if net or gross value)	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NUMBER	OCCUPANT LOAD BY COMBINATION	ROOM OR SPACE TOTAL

In the ROOM OR SPACE DESIGNATION (first) column above, the name or number of a room or space is noted. When rooms have the same use, they may be designated together as one entry.

CLASSIFICATION OF OCCUPANCY OR USE (second) column would have an entry of what the space will be used for (i.e., the function of the space). This may be matched with the use in the first column of IBC Table 1003.2.2.2, which is labeled as OCCUPANCY. Where function of the space does not match the table, then use the most similar to that actually shown in the table.

FLOOR AREA (third) column above is where an actual square foot area from the plan is entered for the location described in the first column. Please note that IBC Table 1003.2.2.2 requires net floor area for some occupancies and gross floor area for others. See the next column (density) for direction on which to use. Correct area amount of each occupancy must be carefully entered.

DENSITY (fourth) column is a number taken directly from IBC Table 1003.2.2.2 as the floor area in square feet per occupant. The table will specify either **gross** area or **net** area for each occupancy type. Table 1003.2.2.2 has a short list of different occupancy choices. These are not the same as the long description lists in Chapter 3 occupancy definitions or long list for the floor loads in Chapter 16 of the IBC or even the many occupancies for ventilation classes in IMC Table 403.3 (which has different, but similar occupant densities). Thus you must choose the occupancy from IBC Table 1003.2.2.2 which most closely resembles how the space is to be used. This may have an effect on how carefully the intended use of each space will have to be labeled on the plans (for example *assembly without fixed seats* has 3 different density entries).

OCCUPANT LOAD BY CALCULATION (fifth) column above is simply the resultant of the floor area in column three divided by the occupant density in column four. Often this will also be the number in column eight, but not always. One of the next two columns may have a higher occupant number; thus fifth column result will not be used in column eight for a total occupancy.

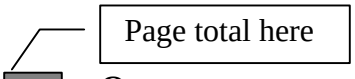
WORKSHEET INSTRUCTIONS (continued)

OCCUPANT LOAD BY ACTUAL NUMBER (sixth) column is when IBC Section 1003.2.2.1 would have the actual number of people designated. This is always used for assembly fixed seating, because the actual quantity of occupants is always known as the number of seats shown on the plans. Or it may be when an owner designates a higher occupant load for a space than is normally expected for that use. It may also be done where plans show a space that has multiple uses; one of which may exceed an occupant total as calculated per Table 1003.2.2.2 requirement.

OCCUPANT LOAD BY COMBINATION (seventh) column will be used when the number by combination IBC Section 1003.2.2.3 requirement to include in the primary space the number of the sum of persons in the primary space plus persons egressing from accessory spaces through the primary space. Note that in the ninth column for Occupants Accounted For In Other Spaces you must indicate a "**YES**" for the accessory space when this seventh column is used.

ROOM OR SPACE TOTAL (eighth) column is the largest value of columns five, six, and seven. This will be used to apply the egress criteria (number, width, swing direction, and location of doors) for that room or space in question.

OCCUPANTS ACCOUNTED FOR IN OTHER SPACES (ninth) column is usually used for a space which is accessory to another occupancy and occupants egress through that primary space. The **yes** answer in this column is used in the case of IBC Section 1003.2.2.3 where occupant load by combination in the seventh column shows an entry for the primary space. It may also be used when a non-simultaneous use of the space has been documented and approved by a code official. The space that is accessory to the primary space would have a "**yes**" marked in this column, but the primary space would remain blank in this column. The response in this column is always assumed **no**, unless the **yes** appears. This column is an important marker used when calculating the total building occupant load, so that these accessory areas are not counted twice.



The total occupant load for this page (or story of the building) =_____ Occupants

The total occupant load for this building =_____ Occupants *(total of all worksheets/stories)*

Total occupant load lines at the bottom of the worksheet (reprinted above) are first for the total for *that worksheet*. The last line is for the total of all worksheets, when more than one worksheet is needed. The total is the addition of total for each room or space shown in the TOTAL (eighth) column, except without adding the spaces by combination. Remember to count occupants of any rooms that are by combination only once, as these should be marked "yes" in the final column.

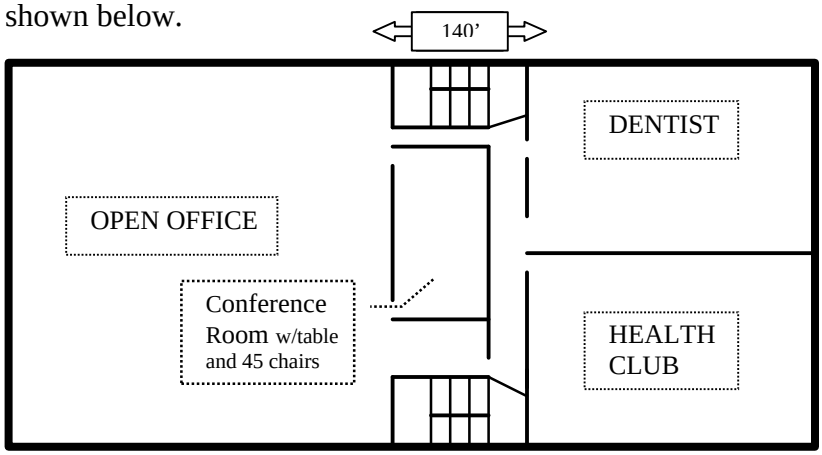
Multi-story buildings are encouraged to use a separate worksheet for each story, as it will then be easier to verify exit width of stairways and other egress components for that floor and for each space within that floor. The building occupant total would be used to verify egress requirements for the building as a whole and to determine requirements for sanitary fixtures in the building.

Please see an example showing the use of this worksheet on the following pages.

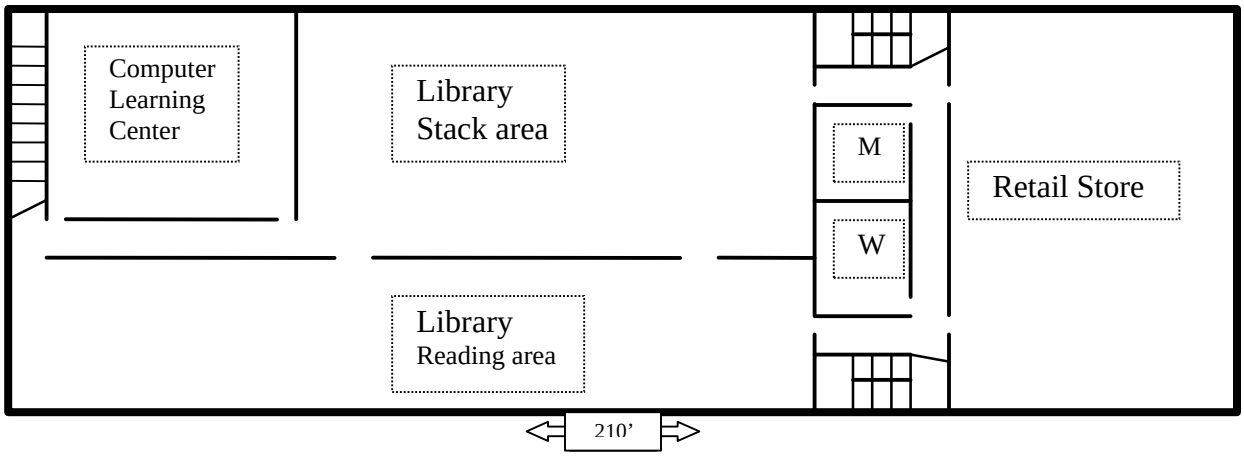
EXAMPLE

A multiple occupancy building of type IIIA construction shown below is three stories in height. The floor plans for each story are shown below.

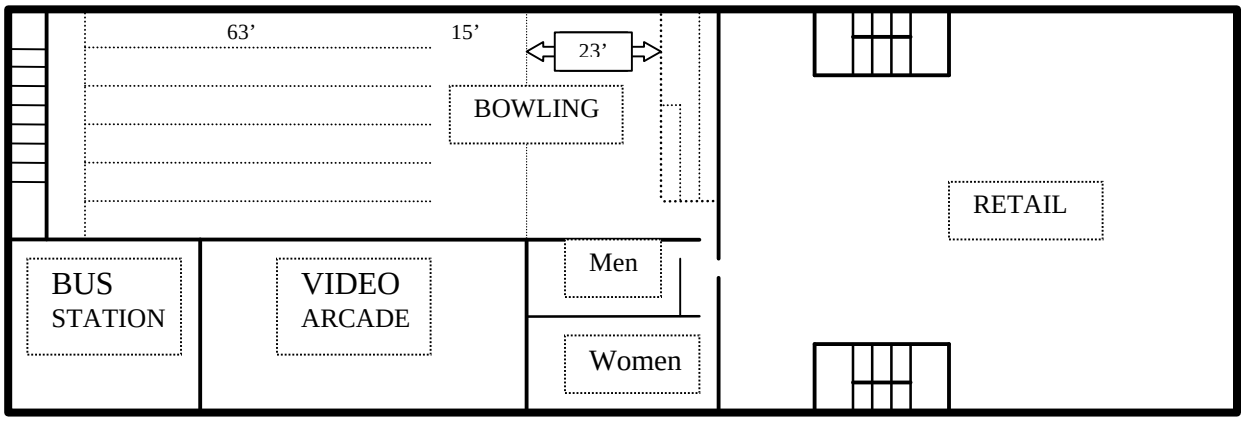
Third floor of 140'x 70' contains an Open Office with a 14'x 35' Conference Room, stairways & corridor, a 40'x 50' Health Club, and a 30'x 50' Dental Clinic. Owner statement is on file for limiting conference room use.



Second floor as shown below contains a 40'x 43' Computer Learning Center, a Library with 45'x 90' stack area & 25'x 140' reading area, a 50'x 70' Retail store, corridor and 2 toilet rooms.



First floor shown below includes Bowling alley with 6 lanes with 23'x 40' additional public area, a 33'x 30' Bus Station, a 56'x 30' Video Arcade, two toilet rooms, and a 90'x 70' Retail store. Bowling alley also rents as a wedding reception hall, by putting a temporary floor over the lanes.



EXAMPLE (continued) *Third floor sheet would look like this*:

59 office + 45 from conference room

OCCUPANT LOAD WORKSHEET

ROOM OR SPACE DESIGNATION	CLASSIFICATION OF Table 1003.2.2.2 OCCUPANCY OR USE	FLOOR AREA (square feet)	DENSITY SF/PERSON (specify if net or gross value)	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NUMBER	OCCUPANT LOAD BY COMBINATION	ROOM OR SPACE TOTAL	OCCUPANTS ACCOUNTED FOR IN OTHER SPACES
Third floor Open Office	Business	5810	100 gross	59		104	104	
third floor Conference	Assembly unconcentrated	490	15 net	33	45		45	YES
third floor Dentist Clinic	Institutional outpatient area	1500	100 gross	15			15	
third floor Health Club	Exercise rooms	2000	50 gross	40			40	

The total occupant load for this worksheet page (or story of the building) = 159 Occupants

Note that the third floor conference room occupants are *only counted once* in total for that story. The total of 104 persons is for when outside people (45 clients) are meeting in the conference room and the office still has about 59 employees at their desks. Also note Dentist could have used "Business" at same density.

Second floor sheet would look like this:

OCCUPANT LOAD WORKSHEET

ROOM OR SPACE DESIGNATION	CLASSIFICATION OF Table 1003.2.2.2 OCCUPANCY OR USE	FLOOR AREA (square feet)	DENSITY SF/PERSON (specify if net or gross value)	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NUMBER	OCCUPANT LOAD BY COMBINATION	ROOM OR SPACE TOTAL	OCCUPANTS ACCOUNTED FOR IN OTHER SPACES
second floor Learning Center	Educational Classroom	1720	20 net	86			86	
second floor Library stacks	Library Stack area	3500	100 gross	35			35	
second floor Library reading	Library Reading rooms	4050	50 net	81			81	
second floor Retail	Mercantile other floors	4900	60 gross	81			81	

The total occupant load for this worksheet page (or story of the building) = 283 Occupants

EXAMPLE **(continued)** **First floor worksheet would look like this:**

OCCUPANT LOAD WORKSHEET

1	2	3	4	5	6	7
ROOM OR SPACE DESIGNATION	CLASSIFICATION OF Table 1003.2.2.2 OCCUPANCY OR USE	FLOOR AREA (square feet)	DENSITY SF/PERSON (specify if net or gross value)	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NUMBER	OCCUPANT LOAD BY COMBINATION
first floor Retail	Mercantile grade floor	7200	30 gross	240		
first floor Bowling Alley	Bowling center Assembly uncon.	6 lanes + 920 SF	lanes*5 + 7 net	162	Banquets 264	
first floor Bus Station	Airport terminal waiting area	990	15 gross	66		
first floor Video Arcade	Assembly Gaming floors	1680	11 gross	153		
first floor north stairway	None	225	0	0		

The total occupant load for this worksheet page (or story of the building) =___723__ Occupants

The total occupant load for this building =__1165___ Occupants *(total of all worksheets/stories)*

159 + 283 + 723

You will note the first floor bowling alley has a higher capacity value in the sixth column for ACTUAL NUMBER occupant load. This was taken for the case where the bowling alley lanes are covered with a temporary floor and a wedding reception (assembly tables & chairs) is being held. The occupant load of 264 persons was from 40'x 99' divided by 15 square foot per person net area.

You will note that the first floor Retail area is a gross area, thus two stairs are not deducted from the area shown in the third column and toilet rooms serving the retail are added to the gross area (even though they appear to be in a separate public area). The factor for gross areas already includes allowances for egress path components and toilet rooms within the factor from Table 1003.2.2.2 of the IBC. Thus totals would still even out in the calculations to approximate the maximum capacity correctly. The second story Retail gross area also has included the toilet rooms, corridor and stairs. The first floor calculation as shown for north stairway would be acceptable as no occupants, because it does not serve the first floor areas and both adjacent areas were based on *net area*, as well as some second floor factors were *net areas* adjacent to that stair.

The totals from this worksheet would be used on the Sanitary Fixture Determination Worksheet and used on Egress Width Worksheet to calculate egress widths for each space, each floor level, and the building.